

Abstract of the Disclosure

The present invention provides a method for forming a contact plug in a semiconductor device capable of preventing an increase of contact resistance caused by a decrease in dopant concentration and suppressing diffusions of dopants implanted into the contact. The dopants are doped in a manner to allow the conductive layer to have different doping distributions with respect to a thickness. Particularly, the dopants are doped until reaching a target deposition thickness by gradually increasing a concentration of the dopants from a first concentration to a second concentration for an interval from an initial deposition of the conductive layer to the target deposition thickness, and the second concentration is consistently maintained throughout for an interval from the target deposition thickness to a complete deposition thickness.